

Site HCl CHEMTECH
ID # Mon000830414
Break 3.3
Other _____
A768 N/C
LV

40126393



SUPERFUND RECORDS

RECEIVED
AUG 20 2001
SUPERFUND DIVISION

M00000830414

Chemtech Distribution
Inc., in CERCLIS

10 INTRODUCTION

This summary of the environmental conditions at the Brenntag-Chemtech site in St Louis, Missouri has been prepared at the request of the U S Environmental Protection Agency (EPA) Included in the summary are brief descriptions of the site history and environmental setting A more detailed description of the work conducted is given as part of the Remedial Investigation and the subsequent groundwater monitoring Conclusions are given at the end of the summary

20 SITE HISTORY AND ENVIRONMENTAL SETTING

The Chemtech St Louis site is located at 139 East Soper Street in St Louis, Missouri 63111 The site is located in an industrial area adjacent to the Mississippi River, on the south side of St Louis The area to the north of the site is owned by the U S Coast Guard (USCG) Residential properties are approximately 1,000 feet to the west of the facility, on the west side of Broadway Avenue There are no schools, hospitals, or parks reported to be within one mile of the facility

Brenntag AG is the current owner and operator of the property Brenntag acquired the business in November 2000 from Holland Chemical, International, Inc , (HCI) HCI acquired the business from Chemtech Industries, Inc (CII) in 1992 CII began operations at the site in 1979 HCI expanded the operations when they purchased the adjacent property from St Louis Steel Casting, Inc The site includes an office, a warehouse, tank farms, truck and railcar loading facilities, a barge dock, a maintenance building, and drum filling areas The current layout of the facility is shown in Figure 2-1

There is no chemical manufacturing on site A few products are blended prior to shipment Liquid chemicals handled at the site include acids, caustic, aromatic solvents, ketones, and chlorinated solvents Chemicals are stored in above ground storage tanks if received in bulk, or in the warehouse if received in drums or other packages There are no active underground storage tanks (UST) or piping for products at the facility All dry and packaged chemicals are stored in the warehouse Acid and caustic drums are rinsed on site The rinse water is neutralized and discharged to the sanitary sewer system

Surface drainage at the site is towards the east and the Mississippi River There are no notable drainage channels on the site, although easterly flowing drainage channels are present both north and south of the site The closest named drainage channel is the River Des Peres Drainage Channel, located approximately 0 9 of a mile east of the site The River Des Peres Drainage Channel drains into the Mississippi River approximately 1 2 miles downstream of the Chemtech facility

The site is underlain by a heterogenous fill, sand and silt layers which appear to be fill composed of natural sediments mixed with slag, a silty clay, and limestone bedrock The fill consists of sandy silt to silty sand with some gravel rich layers A distinct sediment described as slag is found in amounts varying from zero to 50 percent of the fill Two thin layers (less

than six inches thick) composed completely of slag have been defined. The slag passed the Toxic Characteristic Leaching Procedures (TCLP) test in 1992.

The sand and silt layers have apparently been distinguished in the drill logs by the lack of slag in the sediment and relative amounts of silt and sand. These units have less continuity than the layer described as fill. Neither this unit nor the associated fill have distinct layers described in the drill logs, however some indistinct layering may exist based on the variability of the fill described in the logs.

The silty clay is composed of river sediments. The features which distinguish this unit from the overlying units are (1) the black to dark gray color, (2) the amount of organic material, (3) the soft texture, (4) the presence of distinct layers, and (5) the sharp decrease in organic vapor meter readings of headspace samples to zero in this layer.

The limestone bedrock consists of one to two feet of weathered limestone overlying a competent bedrock. This unit is hard and could not be penetrated by the augers or the drive samplers.

During typical Mississippi River flow conditions, the site is approximately 25 to 30 feet above the level of the river. Groundwater elevation is controlled by the river elevation as well as the amount of precipitation and infiltration upgradient from the site. At normal river stage, ground water is found between 10 and 20 feet below the ground surface (bgs). Groundwater flow is normally towards the river. During periods when the river is rising, a temporary reversal of the direction of flow near the river may occur. There are no water supply wells that could be impacted by contamination in the ground water.

3.0 REMEDIAL INVESTIGATION

Previous site investigations have indicated that the primary source area for the contamination at the site is the bulk truck loading area. To assess the presence and extent of soil contamination at the site and further evaluate other areas of potential concern, soil samples were collected for laboratory analysis as part of the November-December 1999 site investigation to supplement soil data collected during previous site investigations. The areas being investigated included (1) former Tank Farms 6 through 14, (2) the location of the former underground storage tank (UST) adjacent to Tank Farm 1, (3) the site of a stormwater clarifier near the facility's maintenance building, and (4) soils from the new monitoring wells installed as part of the investigation. The results of the investigation showed that significant contamination in the tank farms is limited to the upper three feet, the contamination at the UST and clarifier did not appear to be a source of contamination for the groundwater, and that contamination in the soils tested during the installation of monitoring wells decreases to low levels until the capillary fringe is intersected. The contamination in the capillary fringe appears to be due to contamination from ground water, rather from the infiltration of chemicals through the soil. The results of analyses for the soil samples collected from the boreholes drilled for monitoring wells are given in Table 3-1.

Eight new groundwater monitoring wells (MW6 through MW13) were installed in November 1999 to evaluate groundwater quality at the facility. The locations of the wells are shown in Figure 2-2. All wells were installed in eight-inch diameter boreholes. Six of the wells were extended to the top of the limestone bedrock, which ranged in depth from 29 feet bgs on the west side of the site to 43 feet bgs on the eastern side of the property. These wells were installed with a ten foot screen at the bedrock. The remaining two wells (MW8 and MW11) were screened to a depth approximately 10 feet below the water table.

Following the installation of the new monitoring wells, the new wells were all developed, followed by the purging and sampling of all 13 monitoring wells owned by Chemtech and four wells on the USCG property in December 1999. In January 2000, an additional three monitoring wells at the USCG were sampled. Commencing April 2000, a groundwater monitoring program was implemented for the 13 Chemtech monitoring wells. Subsequent groundwater monitoring events were conducted in September and December 2000, and in March and May of 2001.

The results of analyses of all groundwater samples for each well are given in Tables 3-2 through 3-14. Contours showing the results of groundwater sampling for 1992, December 2000, and May 2001 are shown in Figures 3-1 through 3-6. The results of the most recent monitoring analyses are shown in Figure 3-7. The figures show that the contamination measured in the wells in the center of the property is variable. This is most likely due to the presence of free product in the center of the property. The contamination is also migrating toward the Mississippi River. It also appears that natural attenuation is decreasing the level of contamination in some areas. However, the rate of migration and the effectiveness of natural attenuation are uncertain because no recent data is available for the Coast Guard site.

4.0 AMBIENT AIR SAMPLING

To evaluate ambient air quality at the facility, air sampling was conducted. With a wind direction from the southwest, ambient air samples were collected at upwind and downwind locations at the boundaries of the facility. Air samples were collected in laboratory supplied, six-liter stainless steel Summa canisters with a particle filter. Both samples were analyzed for volatile organic compounds (VOCs) by EPA Method TO-14. No VOCs were found in either sample.

5.0 CONCLUSIONS

The contamination in the soil above the capillary fringe does not appear to be a significant concern. The contamination in the ground water is migrating toward the Mississippi River. Samples collected from sheens on the water at the Coast Guard site have indicated that free product is seeping into the river. The rate of seepage is apparently very slow and is dependent on the river stage and upgradient infiltration. The seepage may be enhanced by migration along a sewer trench.

The threat the contamination poses to human health and the environment has not been fully assessed at this point. To accurately assess the threat, the ground water from the wells on

the Coast Guard property must be analyzed for VOCs to provide current data. This data can be used in conjunction with the data from the Brenntag site to more fully characterize the rate of migration and natural attenuation.

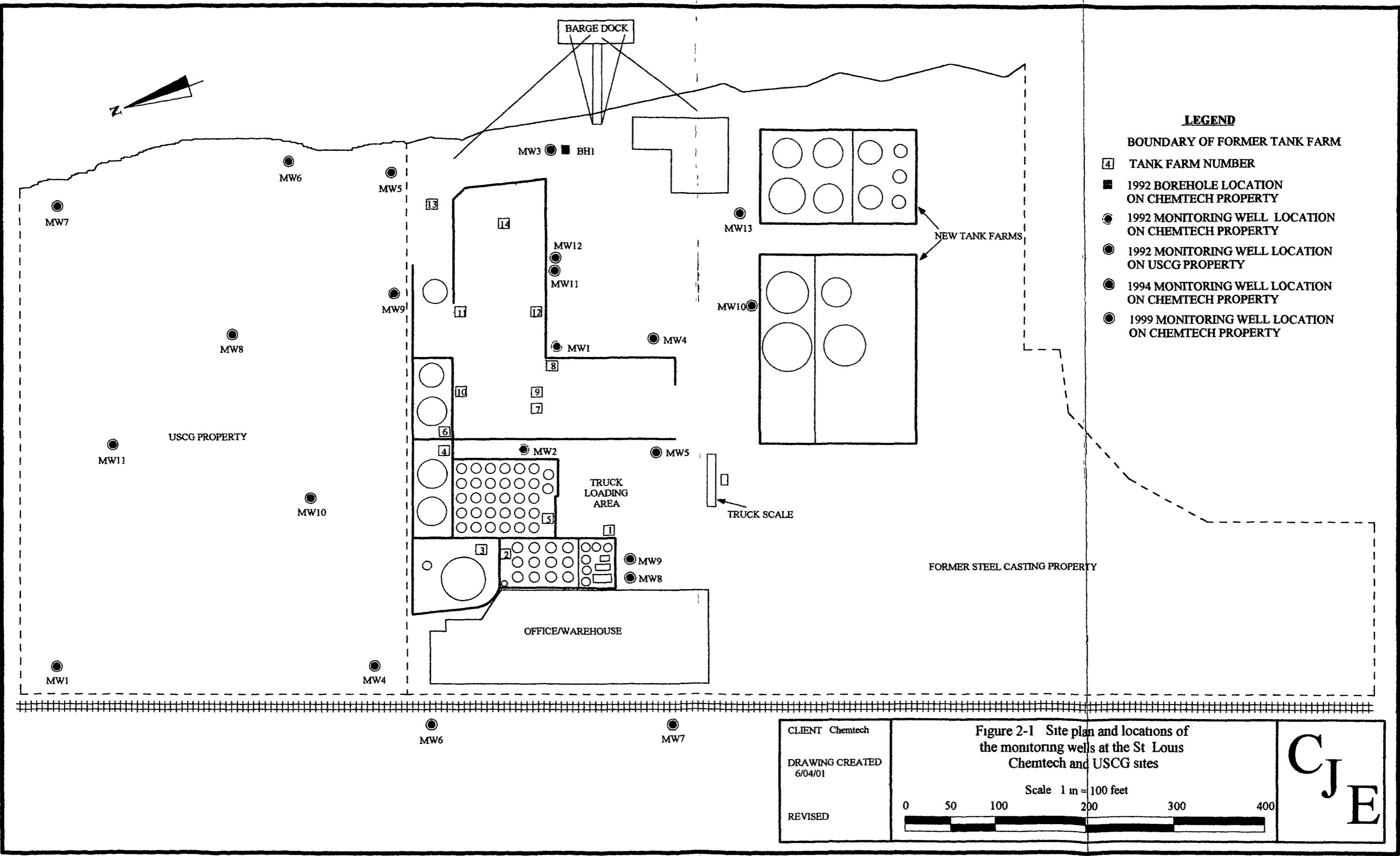
There are no apparent receptors which are immediately at risk as a result of exposure to the contamination. However, the potential for the chemicals to impact organisms in the Mississippi River and to affect onsite workers undertaking excavations has not been addressed in a scientifically defensible manner.

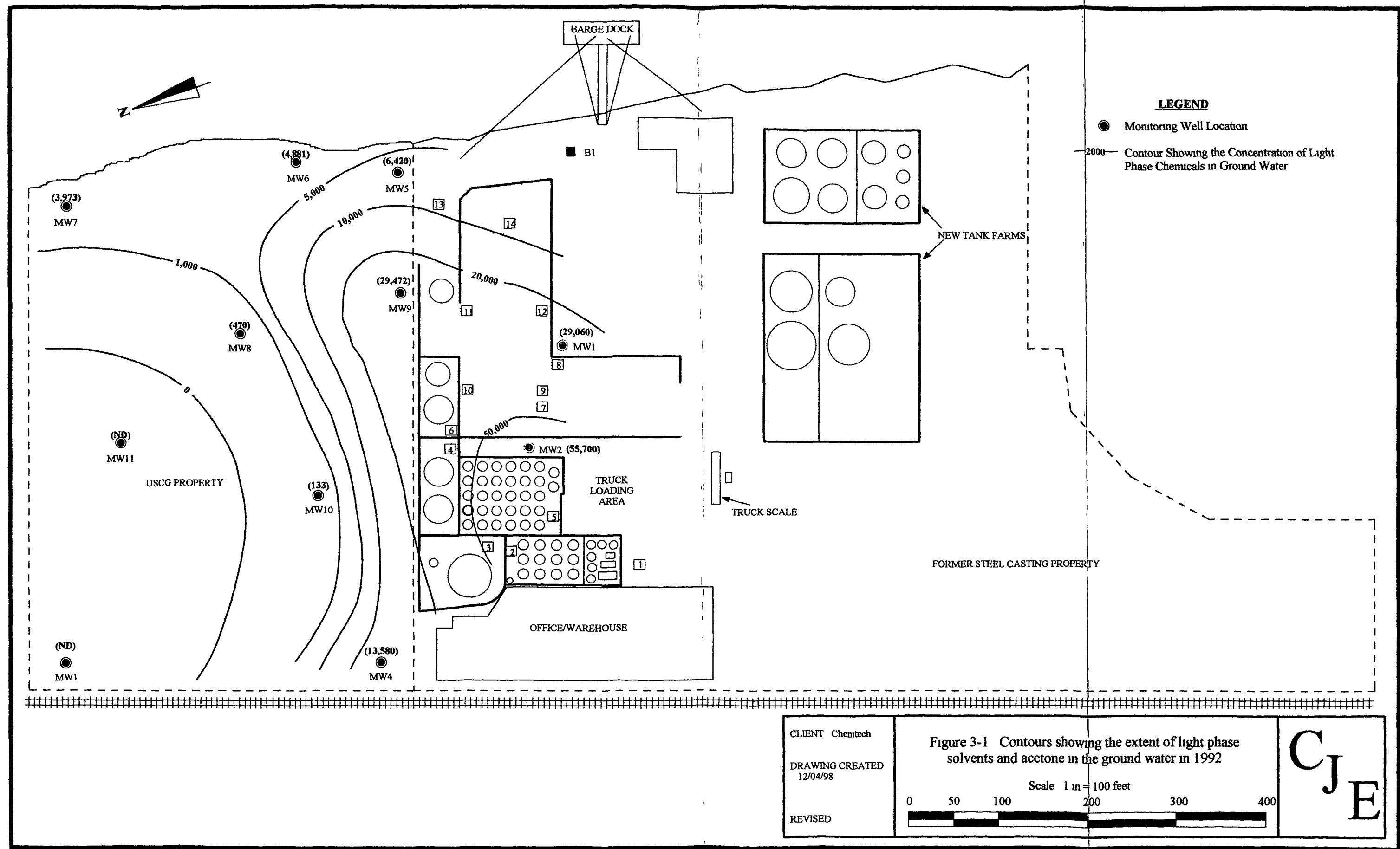
Natural attenuation appears to be effective at reducing the contamination. This is evidenced by the presence of high levels of dichloroethenes relative to tetrachloroethene and trichchloroethene. The rate of reduction of aromatic compounds by natural attenuation is less certain. The reduction of the concentrations of these compounds may be due to dispersion and migration rather than degradation. Further monitoring is necessary to evaluate the rate and effectiveness of natural attenuation.

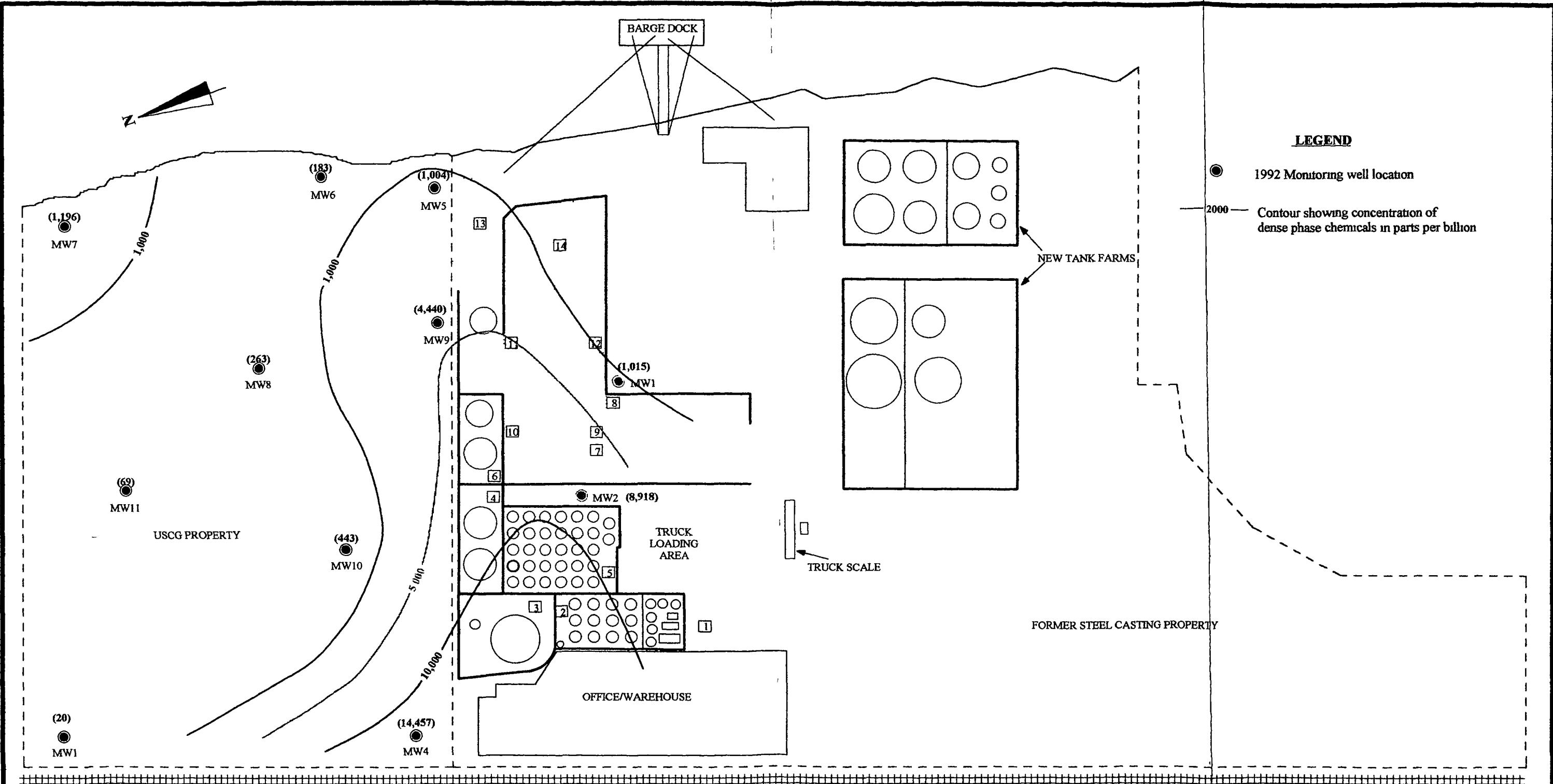
Given the levels of contamination found at the center of the site, it appears that free product may be present. This may require that source reduction be undertaken if natural attenuation will not reduce levels of contamination to acceptable levels for groundwater discharge to the river or to protect the health of onsite workers.

There is no apparent threat of impact to any receptors through exposure to vapors in the ambient air. The office and warehouse are on the upgradient side of the plume. The highest levels of contamination are moving away from these structures. It may be appropriate, however, either through air testing in the office and warehouse or through risk assessment modeling to further evaluate this issue.

It is presumed that improvements in the secondary containment and handling practices for chemicals has reduced or eliminated the discharge of chemicals to the subsurface. These measures should serve to reduce environmental concerns at the site.





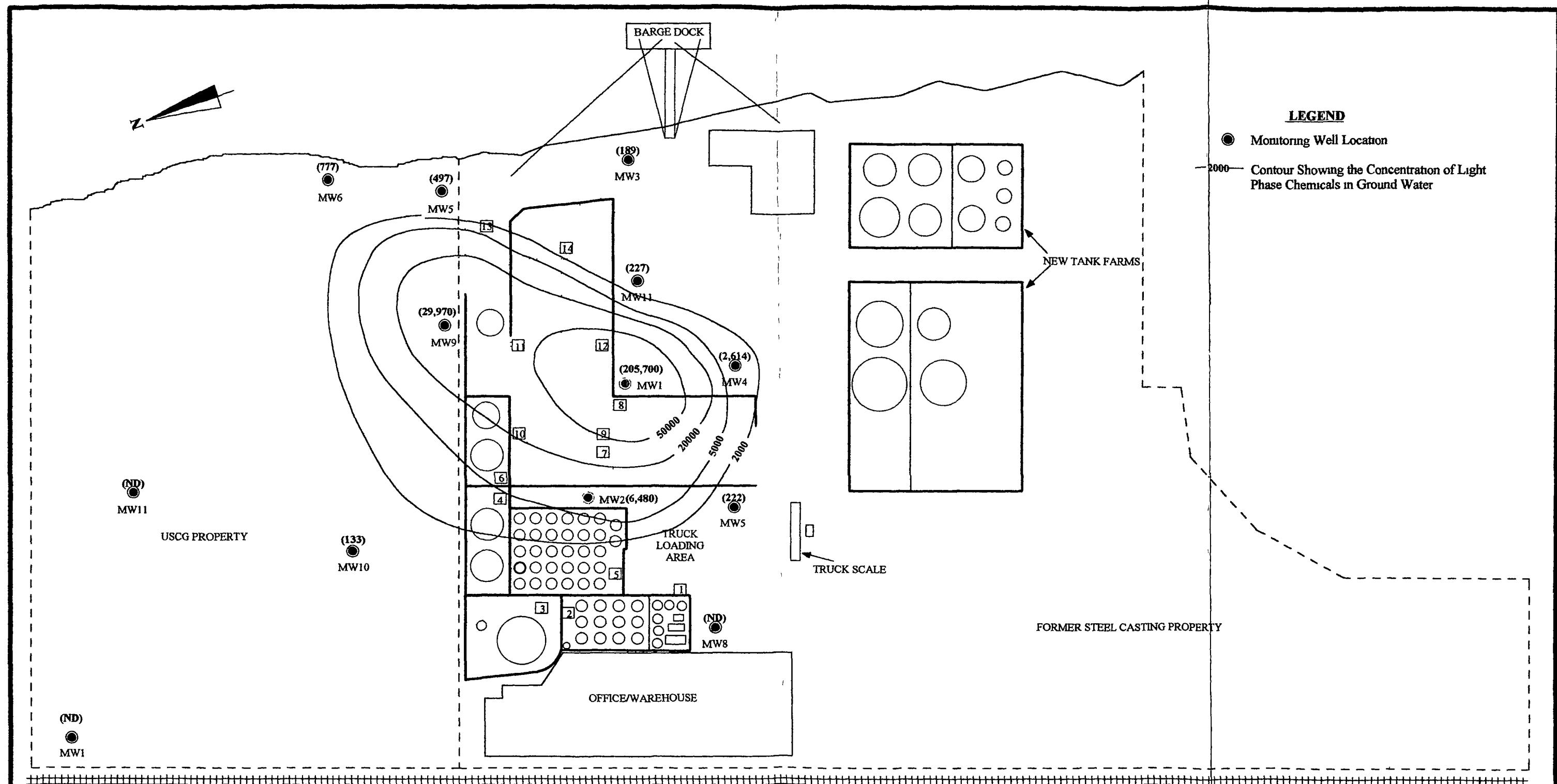


CLIENT Chemtech
DRAWING CREATED
12/04/98
REVISED

Figure 3-2 Contours showing the extent of dense phase solvents in the ground water in 1992

Scale 1 in = 100 feet
0 50 100 200 300 400

C J E

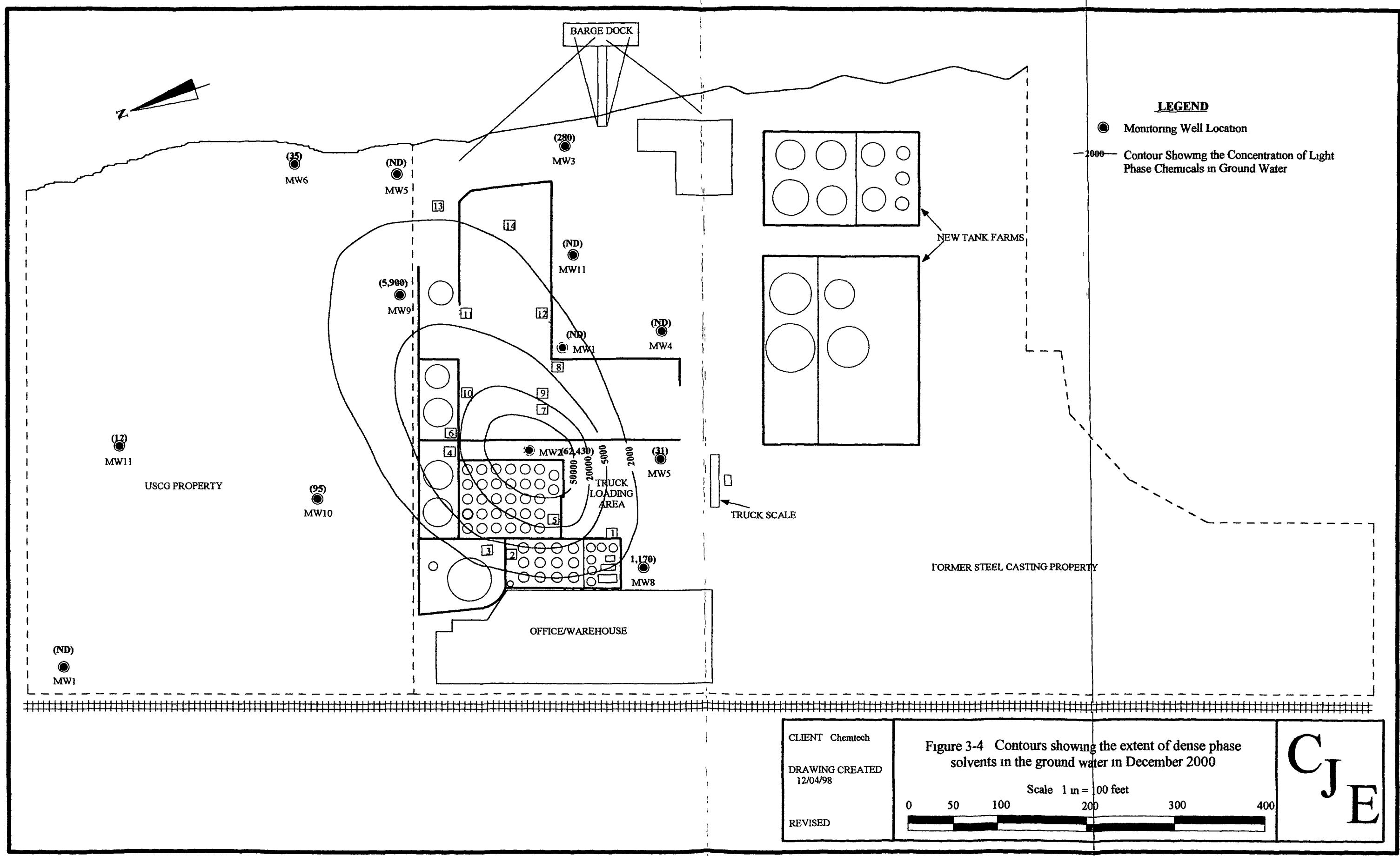


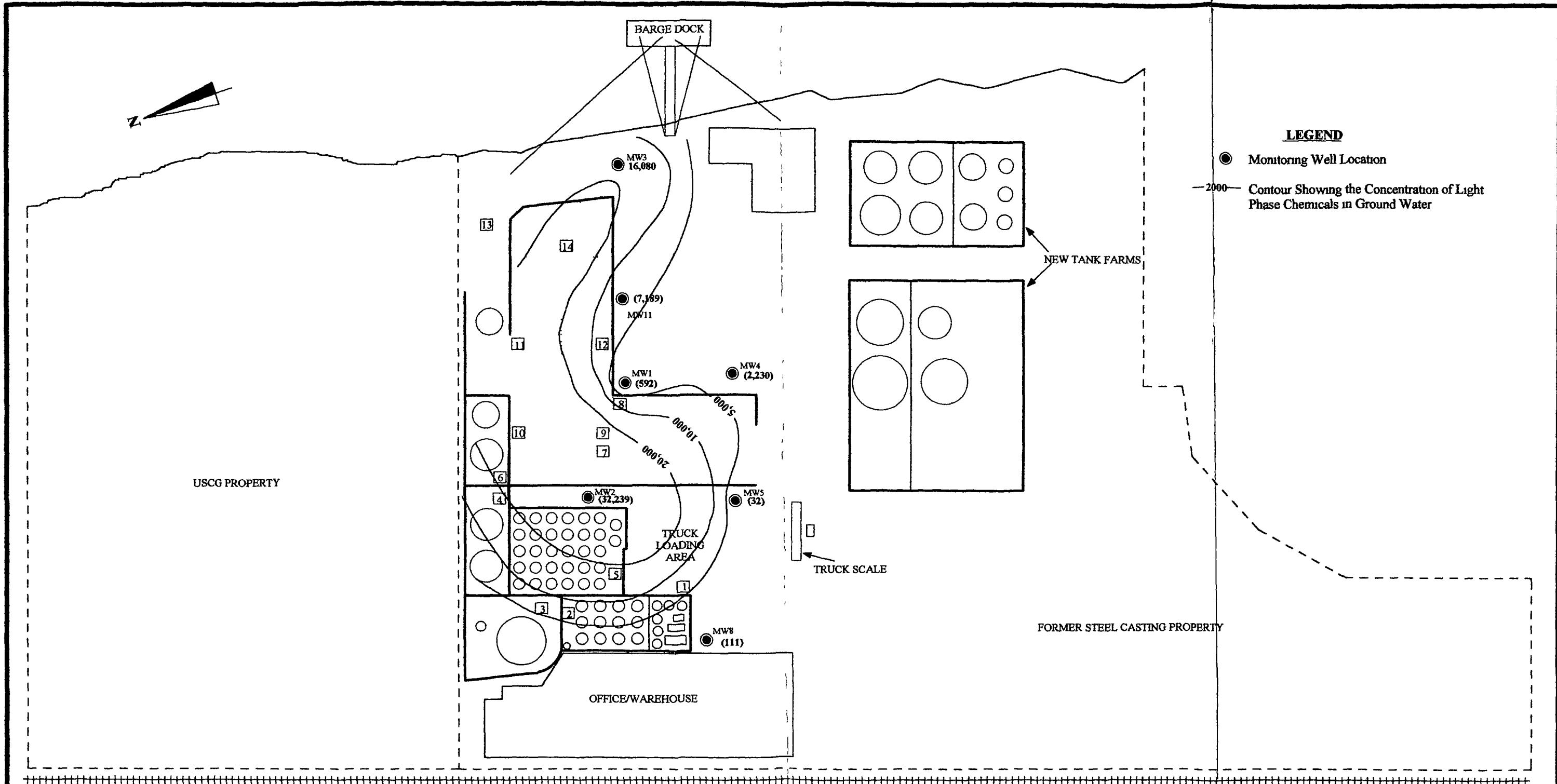
CLIENT Chemtech
DRAWING CREATED
12/04/98
REVISED

Figure 3-3 Contours showing the extent of light phase solvents and acetone in the ground water in December 2000

Scale 1 in = 100 feet
0 50 100 200 300 400

C J E





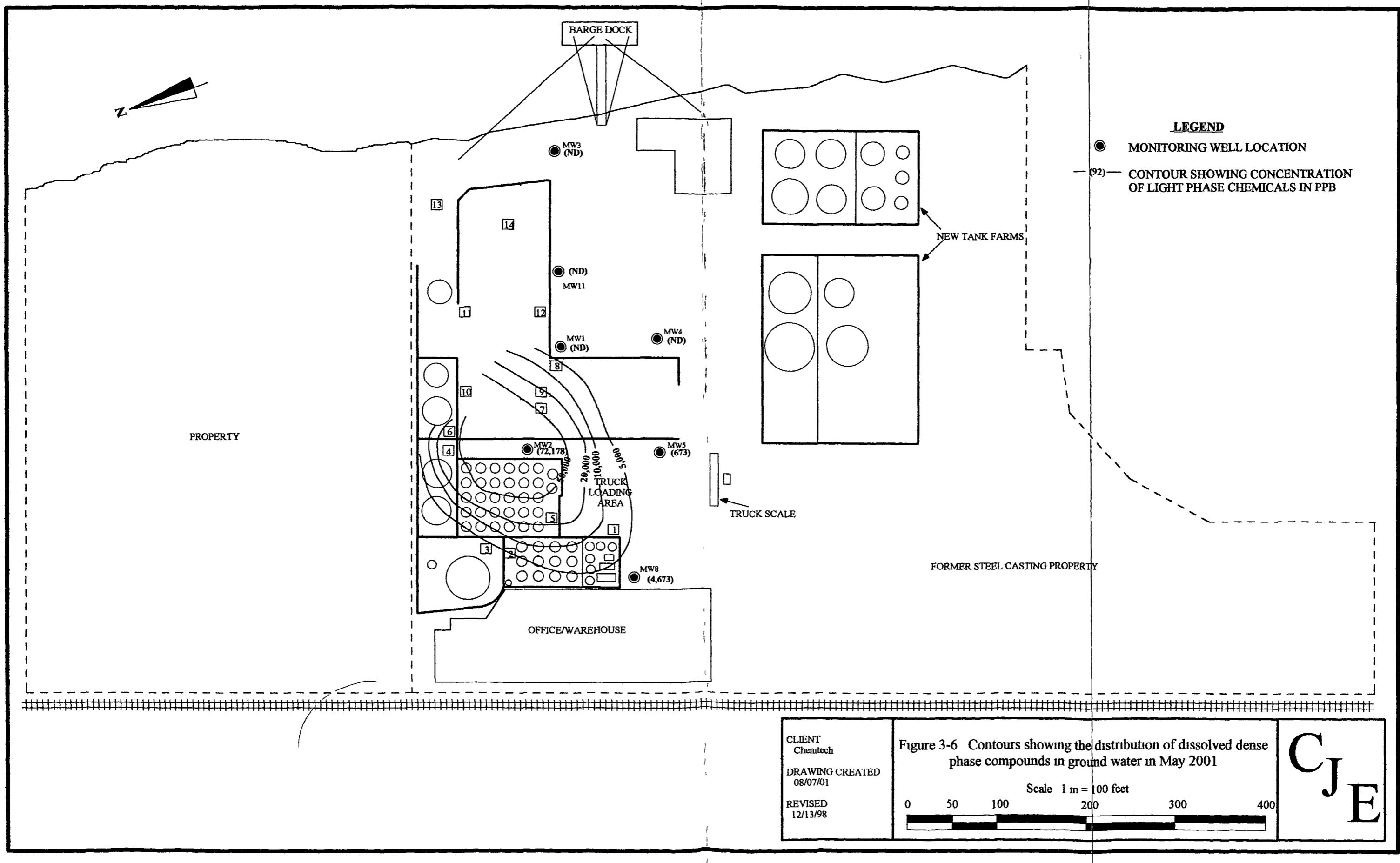
CLIENT Chemtech
DRAWING CREATED
12/09/98
REVISED
12/13/98

Figure 3-5 Contours showing the distribution of dissolved light phase compounds in ground water in May 2001

Scale 1 m = 00 feet

0 50 100 200 300 400

C J E



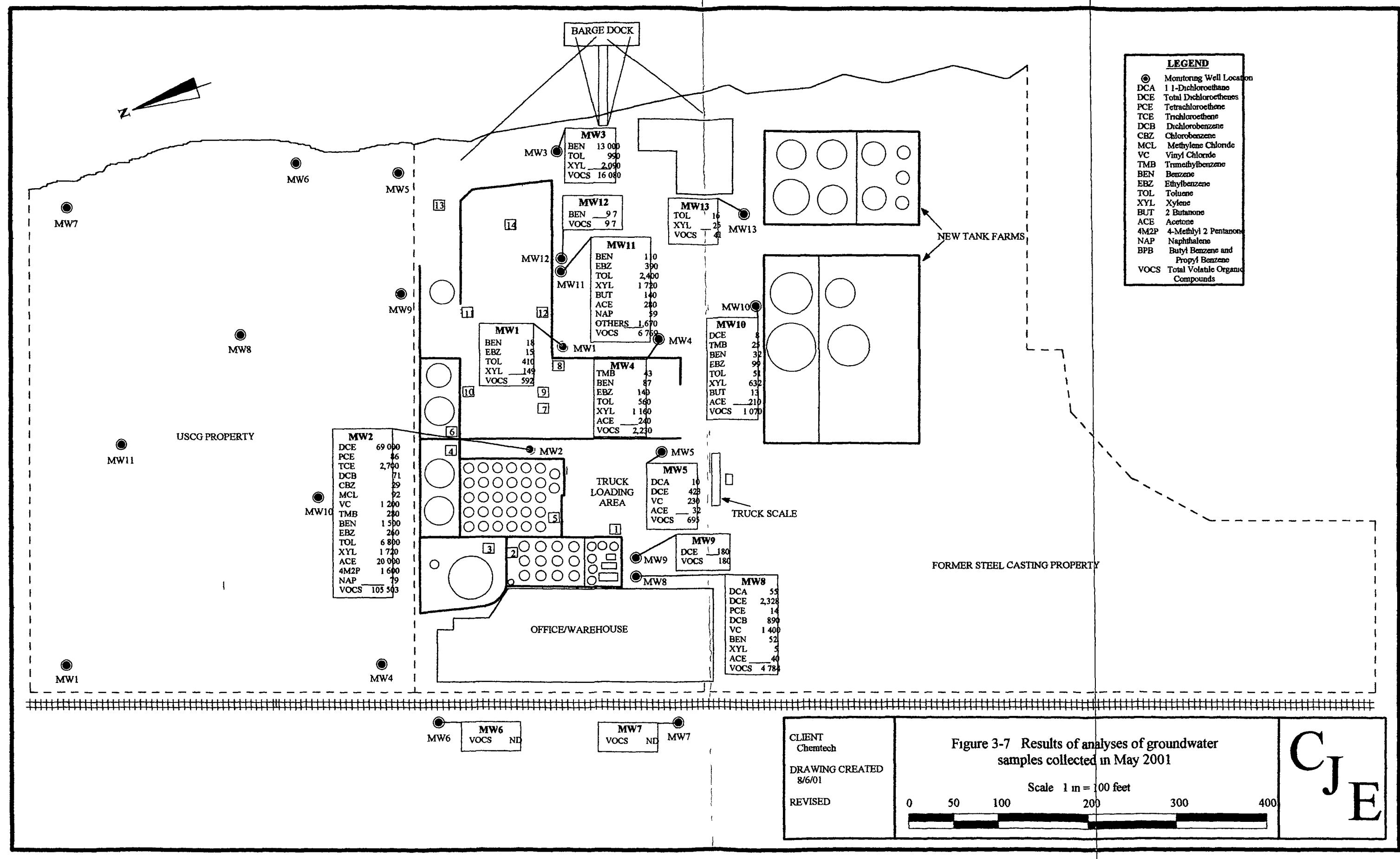


Table 3-1
 Soil Analytical Results EPA Method 8260
 Brenntag Chemtech, Soper Street, St Louis
 December 1999

(Page 1 of 2)

<u>Chemical</u>		MW6-3	MW6 9	MW7-4	MW7 14	MW8 3	MW8-11	MW9 15	MW9 27	MW9 35
Benzene	ug/Kg	6 1	<5 0	3 9j	<5 0	<625	<5 0	16	2 1j	16
2-Butanone (MEK)	ug/Kg	72	46	76	72	8700	720	12	27	7 1
n-Butylbenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	18j	<5 0	<5 0	<5 0
Carbon disulfide	ug/Kg	<10	<10	<10	<10	<1250	<100	<10	<10	<10
1,2-Dichlorobenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	150	14	<5 0
1,4-Dichlorobenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	990	<5 0	18	13
1,1-Dichloroethane	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	21	5 8	<5 0
1,1-Dichloroethene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	<5 0	<5 0	<5 0
cis-1,2-Dichloroethene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	160	200	220	7 1
trans-1,2-Dichloroethene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	3 6j	3 8j	<5 0
Ethylbenzene	ug/Kg	33j	14j	37j	<5 0	1300	86	1 9j	<5 0	<5 0
Isopropylbenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	210j	<5 0	<5 0	<5 0	<5 0
Methylene chloride	ug/Kg	35	<20	<20	<20	<2500	<200	<20	<20	<20
Methyl tert butyl ether	ug/Kg	13	4 4j	5 7j	<10	<1250	<100	<5 0	<5 0	<5 0
Naphthalene	ug/Kg	<10	<10	<10	<10	740j	<100	<10	<10	<10
n-Propylbenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	550j	20j	<5 0	<5 0	<5 0
Tetrachloroethene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	<5 0	130	<5 0
Toluene	ug/Kg	150	37	140	110	840	200	4 2j	4 5j	6 2
1,2,3-Trichlorobenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	<5 0	6 8	<5 0
Trichloroethene	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	<5 0	7 5	43	7 5
1,2,4-Trimethylbenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	4100	120	<5 0	<5 0	<5 0
1,3,5-Trimethylbenzene	ug/Kg	<5 0	<5 0	<5 0	<5 0	1400	50	<5 0	<5 0	<5 0
Vinyl chloride	ug/Kg	<5 0	<5 0	<5 0	<5 0	<625	80	70	33	6 9
Total Xylene	ug/Kg	15	7 2	17 6	5 4	7700	470	7 8	<5 0	<5 0

ug/Kg micrograms per kilogram equal to parts per billion

j Detected but below Practical Quantitation Limit (PQL)

Table 3-1
 Soil Analytical Results EPA Method 8260
 Brenntag Chemtech, Soper Street, St. Louis
 December 1999

(Page 2 of 2)

<u>Chemical</u>		MW10-4	MW10-19	MW11-6	MW12-7	MW12-19	MW12-29	MW13-5	MW13-11
Benzene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
2-Butanone (MEK)	ug/Kg	160	11000	7600	290	9900	7300	200	10000
n-Butylbenzene	ug/Kg	<5 0	<625	<625	<25	<625	990	<5 0	<625
Carbon disulfide	ug/Kg	6 1 J	<1250	<1250	<5 00	<1250	<1250	<10	<1250
1,2-Dichlorobenzene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
1,4-Dichlorobenzene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
1,1-Dichloroethane	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
1,1-Dichloroethene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
cis 1,2-Dichloroethene	ug/Kg	<5 0	<625	<625	60	<625	<625	<5 0	<625
trans 1,2-Dichloroethene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
Ethylbenzene	ug/Kg	4 7 J	<625	<625	<25	<625	3500	5 2	<625
Isopropylbenzene	ug/Kg	<5 0	<625	<625	<25	<625	4600	<5 0	<625
Methylene chloride	ug/Kg	33	<2500	<2500	<100	<2500	<2500	<20	<2500
Methyl tert butyl ether	ug/Kg	19	<1250	<1250	<5 00	<1250	<1250	21	<1250
Naphthalene	ug/Kg	<10	<1250	<1250	76	<1250	3000	<10	<1250
n-Propylbenzene	ug/Kg	<5 0	<625	<625	<25	<625	15000	2 0 J	<625
Tetrachloroethene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
Toluene	ug/Kg	110	420 J	220 J	140	<625	6000	96	160 J
1,2,3-Trichlorobenzene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
Trichloroethene	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
1,2,4 Trimethylbenzene	ug/Kg	<5 0	<625	1700	<25	<625	86000	7 3	2400
1,3,5 Trimethylbenzene	ug/Kg	<5 0	<625	610 J	<25	<625	28000	3 2 J	920
Vinyl chloride	ug/Kg	<5 0	<625	<625	<25	<625	<625	<5 0	<625
Total Xylene	ug/Kg	70	<625	510 J	<25	<625	47700	31 8	550 J

ug/Kg micrograms per kilogram equal to parts per billion

J Detected but below Practical Quantitation Limit (PQL)

Table 3-2
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW1
 Brenntag Chemtech Soper Street Facility, St. Louis

<u>Chemical</u>		<u>Apr 92</u>	<u>Mar 94</u>	<u>Dec 94</u>	<u>Dec 95</u>	<u>Sep 96</u>	<u>May-97</u>	<u>Jan 98</u>	<u>Dec 99</u>	<u>Apr-00</u>	<u>Sep 00</u>	<u>Dec 00</u>	<u>Mar 01</u>	<u>May-01</u>
Acetone	ug/L	ND	ND	ND	ND	290	810	NR	<20000	<20000	<1000	1200	<20	
Benzene	ug/L	1100	5400	16000	ND	4700	1900	9800	6100	5100	5000	7000	4200	18
2 Butanone (MEK)	ug/L	ND	<5000	<5000	<5000	<1000	<500	<10						
n-Butylbenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
sec Butylbenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
tert Butylbenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
Carbon disulfide	ug/L	NR	<1000	<1000	<1000	NR	NR	NR						
Chlorobenzene	ug/L	450	500	ND	ND	940	420	510	<5000	<5000	<5000	280	170	<5
Chloroethane	ug/L	NR	<5000	<5000	<5000	<100	<50	<5						
Chloroform	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
1,2 Dibromo 3-chloropropane	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<250	<50	<5
1,2 Dichlorobenzene	ug/L	310	ND	ND	400	ND	490	<5000	<5000	<5000	560	360	<5	
1,3-Dichlorobenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
1,4-Dichlorobenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
1,1 Dichloroethane	ug/L	25	ND	ND	34	22	65	<5000	<5000	<5000	<100	<50	<5	
1,2 Dichloroethane	ug/L	ND	<5000	<5000	<5000	<100	<50	<5						
1,1 Dichloroethene	ug/L	58	ND	ND	ND	ND	ND	ND	<5000	<5000	<5000	<100	<50	<5
trans 1,2 Dichloroethene	ug/L	ND	<5000	<5000	<5000	<100	<50	<5						
cis 1,2 Dichloroethene	ug/L	ND	1300	ND	ND	330	79	590	<5000	<5000	<5000	410	250	<5
Ethylbenzene	ug/L	560	1700	ND	ND	1800	850	2000	<5000	3100 J	2600 J	3200	3500	15
2 Hexanone	ug/L	NR	NR	NR	ND	NR	NR	NR	<10000	<10000	<10000	<1000	<50	<5
Isopropylbenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
p-Isopropyltoluene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
Methylene chloride	ug/L	12	ND	ND	ND	27 J	12	79	<10000	<20000	12000 J	<100	<50	<5
Methyl tert butyl-ether	ug/L	NR	<10000	<10000	<10000	<100	<50	NR						
4 Methyl 2 pentanone (MIBK)	ug/L	ND	ND	ND	ND	ND	85	ND	<10000	<10000	<10000	<1000	<500	<10
Naphthalene	ug/L	ND	ND	ND	ND	ND	ND	120	<10000	<10000	<10000	150	130	<5
n Propylbenzene	ug/L	NR	NR	NR	ND	NR	NR	NR	<5000	<5000	<5000	<100	<50	<5
Styrene	ug/L	ND	ND	ND	ND	67	ND	ND	<5000	<5000	<5000	170	<50	<5
Tetrachloroethene	ug/L	99	200	ND	ND	320	72	200	<5000	<5000	<5000	220	140	<5
Toluene	ug/L	24000	20000	200000	350000	110000	40000	3100	190000	160000	130000	170000	140000	410
1,1,1 Trichloroethane	ug/L	ND	ND	ND	ND	58	ND	ND	<5000	<5000	<5000	<100	<50	<5
1,1,2 Trichloroethane	ug/L	ND	<5000	<5000	<5000	<100	<50	<5						
Trichloroethene	ug/L	71	200	ND	ND	79	21	110	<5000	<5000	<5000	<100	<50	<5
1,2,4 Trimethylbenzene	ug/L	ND	ND	ND	ND	ND	ND	200	<5000	<5000	<5000	260	200	<5
1,3,5 Trimethylbenzene	ug/L	ND	ND	ND	ND	ND	ND	71	<5000	<5000	<5000	<100	65	<5
Vinyl chloride	ug/L	53	ND	ND	ND	ND	13	ND	<5000	<5000	<5000	<100	<50	<5
Total Xylenes	ug/L	3400	9500	23000	ND	9300	4000	19000	9600	16400	10900	19600	20300	149

ug/L micrograms per liter equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

Table 3-3
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW2
 Brenntag Chemtech Soper Street Facility St Louis

<u>Chemical</u>		<u>Apr 92</u>	<u>Mar 94</u>	<u>Dec 94</u>	<u>Dec 95</u>	<u>Sep 96</u>	<u>May 97</u>	<u>Jan 98</u>	<u>Dec 99</u>	<u>Apr 00</u>	<u>Sep 00</u>	<u>Dec 00</u>	<u>Mar 01</u>	<u>May-00</u>
Acetone	ug/L	ND	ND	ND	ND	ND	880	9800	<1000	<4000	5800 J	20000	NS	20000
Benzene	ug/L	ND	1400	1800	ND	2000	730	1100	940	1200	<2500	1100	NS	1500
2 Butanone (MEK)	ug/L	ND	1300	<1000	<2500	<10000	NS	<50						
n Butylbenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
sec Butylbenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
tert Butylbenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
Carbon disulfide	ug/L	NR	<1000	<200	<5000	NR	NS	NR						
Chlorobenzene	ug/L	ND	<500	<1000	<2500	<1000	NS	29						
Chloroethane	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
Chloroform	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
1,2 Dibromo-3-chloropropane	ug/L	NR	<500	<1000	<2500	<2500	NS	<25						
1,2 Dichlorobenzene	ug/L	2400	ND	ND	ND	76	ND	ND	<500	<1000	<2500	<1000	NS	71
1,3 Dichlorobenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
1,4 Dichlorobenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
1,1 Dichloroethane	ug/L	800	5500	26000	ND	ND	ND	4600	5100	7400	<2500	3900	NS	<25
1,2 Dichloroethane	ug/L	ND	<500	<1000	<2500	<1000	NS	<25						
1,1 Dichloroethene	ug/L	310	300	ND	ND	ND	380	ND	<500	<1000	<2500	<1000	NS	<25
trans 1,2 Dichloroethene	ug/L	ND	2900	4400	ND	ND	ND	1200	1400	2100	<2500	<1000	NS	<25
cis 1,2 Dichloroethene	ug/L	ND	83000	ND	ND	ND	69000	58000	44000	68000	26000	21000	NS	69000
Ethylbenzene	ug/L	2700	ND	ND	210	110	ND	<500	<1000	<2500	71	NS	260	
2-Hexanone	ug/L	NR	<1000	<2000	<5000	<10000	NS	<25						
Isopropylbenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
p-Isopropyltoluene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
Methylene chloride	ug/L	ND	<500	<1000	5400 J	<1000	NS	92						
Methyl tert butyl-ether	ug/L	NR	<500	<2000	<5000	<1000	NS	NR						
4-Methyl 2 pentanone (MIBK)	ug/L	ND	ND	ND	ND	ND	210	ND	<1000	1600 J	<5000	<10000	NS	1600
Naphthalene	ug/L	NR	<1000	<2000	<5000	<1000	NS	79						
n Propylbenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	<25						
Styrene	ug/L	ND	ND	ND	ND	22	ND	ND	<500	<1000	<2500	<1000	NS	<25
Tetrachloroethene	ug/L	770	ND	ND	ND	74	33	ND	<500	<1000	<2500	<1000	NS	86
Toluene	ug/L	33000	1800	6300	ND	4500	2200	9800	3400	5300	4100	26000	NS	6800
1,1,1 Trichloroethane	ug/L	560	ND	ND	ND	ND	ND	ND	<500	<1000	<2500	<1000	NS	<25
1,1,2 Trichloroethane	ug/L	ND	<500	<1000	<2500	<1000	NS	<25						
Trichloroethene	ug/L	2100	2100	6600	ND	2600	2400	3500	930	3000	2700	13000	NS	2700
1,2,4 Trimethylbenzene	ug/L	ND	<500	<1000	<2500	<1000	NS	170						
1,3,5 Trimethylbenzene	ug/L	NR	<500	<1000	<2500	<1000	NS	110						
Vinyl chloride	ug/L	650	ND	ND	ND	190	200	ND	11000	11000	4800	6200	NS	12000
Total Xylenes	ug/L	20000	400	ND	ND	1270	580	2200	840	1180 J	<2500	4700	NS	1720

ug/L micrograms per liter equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

NS Not Sampled

Table 3 4
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW3
 Brenntag Chemtech Soper Street Facility St Louis

Chemical		Mar 94	Dec 94	Dec 95	Sep 96	May 97	Jan 98	Dec 99	Apr 00	Sep 00	Dec 00	Mar-01	May-01
Acetone	ug/L	ND	ND	ND	ND	ND	ND	NR	<50	<20	<50	<500	<2000
Benzene	ug/L	240000	23000	39000	9700	17000	1000	73	380	19	31	2300	13000
2 Butanone (MEK)	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<500	<1000
n-Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
sec Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
tert Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
Carbon disulfide	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<10	NR	NR	<500
Chlorobenzene	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
Chloroethane	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
Chloroform	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
1 2 Dibromo-3 chloropropane	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<12	<50	<500
1 2 Dichlorobenzene	ug/L	ND	ND	15 J	ND	ND	ND	<25	<25	<50	<50	<50	<500
1 3 Dichlorobenzene	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
1 4-Dichlorobenzene	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
1 1 Dichloroethane	ug/L	ND	ND	55	11	ND	<25	<25	<50	<50	<50	<50	<500
1 2 Dichloroethane	ug/L	ND	690	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
1 1 Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
trans-1 2 Dichloroethene	ug/L	ND	ND	ND	ND	6	ND	<25	<25	<50	<50	<50	<500
cis 1 2 Dichloroethene	ug/L	ND	ND	88	120	ND	<25	<25	30 J	<50	<50	<50	<500
Ethylbenzene	ug/L	100	ND	ND	49	63	12	27	<25	42 J	<50	<50	<500
2 Hexanone	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<50	<50	<500
Isopropylbenzene	ug/L	ND	ND	ND	ND	ND	74	<25	<25	<50	<50	<50	<500
p Isopropyltoluene	ug/L	NR	NR	NR	NR	NR	NR	<25	<25	<50	<50	<50	<500
Methylene chloride	ug/L	ND	ND	ND	ND	75	10	<25	<25	44 J	<50	<50	<500
Methyl tert butyl ether	ug/L	NR	NR	NR	NR	NR	NR	<50	<10	<50	<50	<50	NR
4 Methyl 2 pentanone (MIBK)	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<10	<50	<500	<1000
Naphthalene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<10	<50	<50	<500
n Propylbenzene	ug/L	ND	ND	ND	ND	ND	12	<25	<25	<50	<50	<50	<500
Styrene	ug/L	ND	ND	31 J	ND	ND	13 J	<25	<50	<50	<50	<50	<500
Tetrachloroethene	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
Toluene	ug/L	500	ND	ND	47	150	11	<25	14 J	46 J	30	<50	990
1 1 1 Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
1 1 2 Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
Trichloroethene	ug/L	ND	ND	ND	34 J	8	ND	280	<25	<50	<50	<50	<500
1 2 4 Trimethylbenzene	ug/L	ND	ND	ND	150	ND	24	<25	<25	31 J	<50	70	<500
1 3 5 Trimethylbenzene	ug/L	ND	ND	ND	ND	ND	29	<25	<25	28 J	<50	81	<500
Vinyl chloride	ug/L	ND	ND	ND	ND	ND	ND	<25	<25	<50	<50	<50	<500
Total Xylenes	ug/L	500	ND	ND	191	230	58	76	28 J	121	9	77	2090

ug/l micrograms per liter equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

Table 3-5
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW4
 Brenntag Chemtech Soper Street Facility, St. Louis

<u>Chemical</u>		<u>Mar 94</u>	<u>Dec 94</u>	<u>Dec 95</u>	<u>Sep 96</u>	<u>May 97</u>	<u>Jan 98</u>	<u>Dec 99</u>	<u>Apr 00</u>	<u>Sep 00</u>	<u>Dec 00</u>	<u>Mar 01</u>	<u>May 01</u>
Acetone	ug/L	ND	ND	ND	ND	ND	ND	NR	<200	<20	<10	<50	240
Benzene	ug/L	300	36	53	42	90	33	120	48 J	29	44	92	87
2-Butanone (MEK)	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	56	<50
n Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
sec Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
tert Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
Carbon disulfide	ug/L	NR	NR	NR	NR	NR	NR	<100	<100	<10	NR	NR	NR
Chlorobenzene	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
Chloroethane	ug/L	ND	ND	ND	ND	ND	11	<50	<50	68	9	<5	<25
Chloroform	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
1,2-Dibromo 3 chloropropane	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<25	<5	<25
1,2-Dichlorobenzene	ug/L	ND	ND	ND	27 J	ND	ND	<50	<50	<50	11	<5	<25
1,3-Dichlorobenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
1,4-Dichlorobenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
1,1-Dichloroethane	ug/L	ND	110	32	20	76	56	<50	<50	59	74	<5	<25
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
1,1-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
trans 1,2-Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
cis 1,2-Dichloroethene	ug/L	ND	ND	ND	30	16	10	<50	<50	66	11	<5	<25
Ethylbenzene	ug/L	200 J	34	33	37	62	15	140	33 J	12	14	<5	140
2-Hexanone	ug/L	NR	NR	NR	NR	NR	NR	<100	<100	<10	<10	<5	<25
Isopropylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	23 J	29	<5	<25
p-Isopropyltoluene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
Methylene chloride	ug/L	ND	ND	ND	ND	74	99	<50	<50	66 J	<10	<5	<25
Methyl tert butyl ether	ug/L	NR	NR	NR	NR	NR	NR	<50	<100	<10	<10	<5	NR
4-Methyl 2-pentanone (MIBK)	ug/L	ND	ND	ND	ND	ND	ND	<100	<100	<10	<10	<50	<50
Naphthalene	ug/L	NR	NR	NR	NR	NR	NR	<100	<100	<10	<10	<5	<25
n-Propylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	<10	<5	<25
Styrene	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
Tetrachloroethene	ug/L	ND	ND	ND	ND	ND	25	<50	<50	<50	<10	<5	<25
Toluene	ug/L	2700 J	ND	29	190	270	31	1700	1000	20	11	<5	560
1,1,1-Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
1,1,2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
Trichloroethene	ug/L	ND	ND	ND	ND	ND	ND	<50	<50	<50	<10	<5	<25
1,2,4-Trimethylbenzene	ug/L	ND	ND	ND	23 J	ND	ND	24 J	<50	<50	14	<5	43
1,3,5-Trimethylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<50	<50	<50	NR	<5	<25
Vinyl chloride	ug/L	ND	ND	ND	52 J	ND	ND	<50	<50	33 J	29	<5	<25
Total Xylenes	ug/L	1100 J	ND	27	228	200	287	630	115	64	106	<5	1160

ug/L micrograms per liter equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

Table 3 6
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW5
 Brenntag Chemtech Soper Street Facility St Louis

<u>Chemical</u>		<u>Mar 94</u>	<u>Dec 94</u>	<u>Dec 95</u>	<u>Sep-96</u>	<u>May 97</u>	<u>Jan 98</u>	<u>Dec 99</u>	<u>Apr 00</u>	<u>Sep 00</u>	<u>Dec 00</u>	<u>Mar 01</u>	<u>May 01</u>
Acetone	ug/L	11000	ND	ND	ND	ND	250	<10	<20	6 9 J	<50	21	32
Benzene	ug/L	100	ND	ND	8 9	ND	9 8	<5 0	4 1 J	<10	<5 0	37	<5
2 Butanone (MEK)	ug/L	600	ND	ND	ND	ND	ND	<5 0	35	<10	<50	37	<10
n Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
sec-Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
tert Butylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
Carbon disulfide	ug/L	NR	NR	NR	NR	NR	NR	2 2 J	12	<10	NR	NR	NR
Chlorobenzene	ug/L	ND	ND	ND	14	ND	5 2	3 1 J	9 1	<10	<5 0	2 8	<5
Chloroethane	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
Chloroform	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
1 2 Dibromo 3 chloropropane	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<12	<2	<5
1 2 Dichlorobenzene	ug/L	ND	ND	ND	ND	ND	22	10	<5 0	<10	15	13	<5
1 3-Dichlorobenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	7 3 J	<5 0	<2	<5
1 4 Dichlorobenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	5 0 J	<5 0	<2	<5
1 1 Dichloroethane	ug/L	ND	120	ND	52	15	24	4 7 J	19	9 8 J	7 9	6 5	<5
1 2 Dichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<5 0	<5 0	<10	<5 0	<2	<5
1 1 Dichloroethene	ug/L	ND	ND	ND	ND	ND	ND	<5 0	<5 0	<10	<5 0	<2	<5
trans-1 2 Dichloroethene	ug/L	ND	ND	ND	1 7 J	16	12	<5 0	<5 0	14	<5 0	2 2	<5
cis 1 2 Dichloroethene	ug/L	500	ND	ND	25	880	520	5 6	26	110	15	39	5 1
Ethylbenzene	ug/L	100	ND	ND	36	ND	25	6 1	34	4 0 J	7 1	8	<5
2 Hexanone	ug/L	NR	NR	NR	NR	NR	NR	<10	<10	<20	<50	<2	<5
Isopropylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
p Isopropyltoluene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
Methylene chloride	ug/L	ND	ND	ND	ND	8 8	12	<5 0	<20	6 4 J	<5 0	<2	6 2
Methyl tert butyl ether	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<10	<20	<5 0	<2	NR
4 Methyl 2 pentanone (MIBK)	ug/L	ND	ND	ND	ND	ND	ND	<10	4 2 J	<20	<50	<20	<10
Naphthalene	ug/L	ND	ND	ND	ND	ND	7 9	2 7 J	<10	<20	<5 0	3 1	<5
n Propylbenzene	ug/L	NR	NR	NR	NR	NR	NR	<5 0	<5 0	<10	<5 0	<2	<5
Styrene	ug/L	ND	ND	ND	1 0 J	ND	ND	<5 0	<5 0	<10	<5 0	<2	<5
Tetrachloroethene	ug/L	ND	ND	ND	3 8 J	ND	7 4	2 7 J	<5 0	<10	<5 0	<2	<5
Toluene	ug/L	3300	46	4300	140	ND	210	13	190	13	34	17	<5
1 1 1 Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<5 0	<5 0	<10	<5 0	<2	<5
1 1 2-Trichloroethane	ug/L	ND	ND	ND	ND	ND	ND	<5 0	<5 0	<10	<5 0	<2	<5
Trichloroethene	ug/L	200	270	ND	2 4 J	ND	11	5 3	34	<10	<5 0	<2	<5
1 2 4 Trimethylbenzene	ug/L	ND	ND	ND	61	ND	17	11	<5 0	<10	10	9 9	<5
1 3 5 Trimethylbenzene	ug/L	ND	ND	ND	ND	ND	7 8	4 9	<5 0	<10	<5 0	4 9	<5
Vinyl chloride	ug/L	ND	ND	ND	24	280	200	<5 0	31	460	9 5	63	<5
Total Xylenes	ug/L	1000	ND	27	90	ND	139	182	330	4 3 J	200	135	<5

ug/L micrograms per liter equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

Table 3-7
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW6
 Brenntag Chemtech, Soper Street Facility, St Louis

<u>Chemical</u>		<u>Dec-99</u>	<u>Apr-00</u>	<u>Sep-00</u>	<u>Dec 00</u>	<u>Mar-01</u>	<u>May-01</u>
Acetone	ug/L	<10	<20	<20	<10	<10	<20
Benzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
2-Butanone (MEK)	ug/L	<5 0	<5 0	<5 0	<10	<10	<10
n-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
sec-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
tert-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Carbon disulfide	ug/L	<10	<1 00	<1 00	NR	NR	NR
Chlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Chloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Chloroform	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,2-Dibromo 3-chloropropane	ug/L	<5 0	<5 0	<5 0	<2 5	<1	<5
1,2-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,3-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,4-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,1-Dichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,2-Dichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,1-Dichloroethylene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
trans-1,2-Dichloroethylene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
cis-1,2 Dichloroethylene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Ethylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
2-Hexanone	ug/L	<10	<1 00	<1 00	<10	<1	<5
Isopropylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
p-Isopropyltoluene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Methylene chloride	ug/L	<5 0	<20	3 1 J	<1 0	<1	<5
Methyl-tert-butyl-ether	ug/L	<5 0	<1 00	<1 00	<1 0	<1	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<1 00	<1 00	<10	<10	<10
Naphthalene	ug/L	<10	<1 00	<1 00	<1 0	<1	<5
n Propylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Styrene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Tetrachloroethylene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Toluene	ug/L	<5 0	33	2 1 J	<1 0	<1	<5
1,1,1-Trichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,1,2-Trichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Trichloroethylene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,2,4-Trimethylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,3,5 Trimethylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Vinyl chloride	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Total Xylenes	ug/L	<5 0	4 3 J	<5 0	<1 3	<1 3	<5

ug/L micrograms per liter, equal to parts per billion

ND Not Detected

NR Not Reported

J Detected but below Practical Quantitation Limit

Table 3-8
Groundwater Analytical Results for Volatile Organic Compounds
Monitoring Well MW7
Brenntag Chemtech, Soper Street Facility, St Louis

<u>Chemical</u>		<u>Dec-99</u>	<u>Apr-00</u>	<u>Sep-00</u>	<u>Dec-00</u>	<u>Mar-01</u>	<u>May-01</u>
Acetone	ug/L	<10	<20	<20	<10	<10	<20
Benzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
2-Butanone (MEK)	ug/L	<5 0	<5 0	<5 0	<10	<10	<10
n-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
sec-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
tert-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Carbon disulfide	ug/L	<10	<10	<10	NR	NR	NR
Chlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Chloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Chloroform	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,2-Dibromo-3-chloropropane	ug/L	<5 0	<5 0	<5 0	<2 5	<1	<5
1,2-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,3-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,4-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<1 0	1 9	<5
1,1-Dichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,2-Dichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,1-Dichloroethene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
trans-1,2-Dichloroethene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
cis-1,2-Dichloroethene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Ethylbenzene	ug/L	<5 0	2 3 J	<5 0	<1 0	<1	<5
2-Hexanone	ug/L	<10	<10	<10	<10	<1	<5
Isopropylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
p-Isopropyltoluene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Methylene chloride	ug/L	<5 0	<20	4 7 J	<1 0	<1	<5
Methyl-tert-butyl-ether	ug/L	<5 0	<10	<10	<1 0	<1	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	<10	<10	<10	<1 0	<1	<5
n-Propylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Styrene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Tetrachloroethene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Toluene	ug/L	<5 0	7 1	2 6 J	<1 0	<1	<5
1,1,1-Trichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,1,2-Trichloroethane	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Trichloroethene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,2,4-Trimethylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
1,3,5-Trimethylbenzene	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Vinyl chloride	ug/L	<5 0	<5 0	<5 0	<1 0	<1	<5
Total Xylenes	ug/L	<5 0	10 9	10 9	<1 3	<1 3	<5

ug/L micrograms per liter, equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

Table 3-9
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW8
 Brenntag Chemtech, Soper Street Facility, St. Louis

Chemical		Dec-99	Apr-00	Sep-00	Dec-00	Mar-01	May-01
Acetone	ug/L	<100	<200	NS	<1000	<500	40
Benzene	ug/L	41	63	NS	<100	<50	52
2-Butanone (MEK)	ug/L	<50	<50	NS	<1000	<500	<10
n-Butylbenzene	ug/L	<50	<50	NS	<100	<50	<5
sec-Butylbenzene	ug/L	<50	<50	NS	<100	<50	<5
tert-Butylbenzene	ug/L	<50	<50	NS	<100	<50	<5
Carbon disulfide	ug/L	<100	33 J	NS	NR	NR	NR
Chlorobenzene	ug/L	<50	<50	NS	<100	<50	<5
Chloroethane	ug/L	<50	<50	NS	<100	<50	<5
Chloroform	ug/L	<50	<50	NS	<100	<50	<5
1,2-Dibromo-3-chloropropane	ug/L	<50	<50	NS	<250	<50	<5
1,2-Dichlorobenzene	ug/L	<50	<50	NS	<100	<50	<5
1,3-Dichlorobenzene	ug/L	<50	<50	NS	<100	<50	<5
1,4-Dichlorobenzene	ug/L	100	680	NS	920	1300	890
1,1-Dichloroethane	ug/L	49	80	NS	<100	<50	55
1,2-Dichloroethane	ug/L	<50	<50	NS	<100	<50	<5
1,1-Dichloroethene	ug/L	10	<50	NS	<100	<50	<5
trans-1,2-Dichloroethylene	ug/L	95	95	NS	<100	<50	28
cis-1,2-Dichloroethylene	ug/L	2200	2700	NS	590	1200	2300
Ethylbenzene	ug/L	<50	<50	NS	<100	<50	<5
2-Hexanone	ug/L	<100	<1000	NS	<1000	<50	<5
Isopropylbenzene	ug/L	<50	<50	NS	<100	<50	<5
p-Isopropyltoluene	ug/L	<50	<50	NS	<100	<50	<5
Methylene chloride	ug/L	<50	<200	NS	<100	<50	<5
Methyl-tert-butyl-ether	ug/L	NR	<1000	NS	<100	<50	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<100	21 J	NS	<1000	<500	<10
Naphthalene	ug/L	<100	<1000	NS	<100	<50	<5
n-Propylbenzene	ug/L	<50	<50	NS	<100	<50	<5
Styrene	ug/L	<50	<50	NS	<100	<50	<5
Tetrachloroethylene	ug/L	<50	<50	NS	<100	<50	<5
Toluene	ug/L	41 J	82	NS	<100	<50	14
1,1,1-Trichloroethane	ug/L	<50	<50	NS	<100	<50	<5
1,1,2-Trichloroethane	ug/L	<50	<50	NS	<100	<50	<5
Trichloroethylene	ug/L	<50	<50	NS	<100	<50	<5
1,2,4-Trimethylbenzene	ug/L	<50	<50	NS	<100	<50	<5
1,3,5 Trimethylbenzene	ug/L	<50	<50	NS	<100	<50	<5
Vinyl chloride	ug/L	860	1500	NS	260	570	1400
Total Xylenes	ug/L	<50	<50	NS	<130	<50	52

ug/L micrograms per liter, equal to parts per billion

NS Not Sampled

ND Not Detected

NR Not Reported

J Detected but below Practical Quantitation Limit

Table 3-10
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW9
 Brenntag Chemtech, Soper Street Facility, St Louis

<u>Chemical</u>		<u>Dec-99</u>	<u>Apr-00</u>	<u>Sep-00</u>	<u>Dec-00</u>	<u>Mar 01</u>	<u>May 01</u>
Acetone	ug/L	<10	<20	<20	<500	<10	<20
Benzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
2 Butanone (MEK)	ug/L	3 4 J	<5 0	<5 0	<500	<10	<10
n-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
sec-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
tert-Butylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Carbon disulfide	ug/L	<10	<10	<10	NR	NR	NR
Chlorobenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Chloroethane	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Chloroform	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,2-Dibromo-3-chloropropane	ug/L	<5 0	<5 0	<5 0	<120	<1	<5
1,2-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,3-Dichlorobenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,4-Dichlorobenzene	ug/L	21	<5 0	<5 0	1300	<1	<5
1,1-Dichloroethane	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,2-Dichloroethane	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,1-Dichloroethene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
trans-1,2-Dichloroethene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
cis-1,2-Dichloroethene	ug/L	25	2 5 J	3 2 J	820	3 8	18
Ethylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
2-Hexanone	ug/L	<10	<10	<10	<500	<1	<5
Isopropylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
p-Isopropyltoluene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Methylene chloride	ug/L	<5 0	<20	5 6 J	<50	<1	<5
Methyl-tert-butyl-ether	ug/L	NR	<10	<10	<50	<1	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<10	<10	<500	<10	<10
Naphthalene	ug/L	<10	<10	<10	<50	<1	<5
n-Propylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Styrene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Tetrachloroethene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Toluene	ug/L	74	46	2 3 J	320	<1	<5
1,1,1-Trichloroethane	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,1,2-Trichloroethane	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Trichloroethene	ug/L	5 2	4 1 J	2 5 J	<50	4	<5
1,2,4-Trimethylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
1,3,5-Trimethylbenzene	ug/L	<5 0	<5 0	<5 0	<50	<1	<5
Vinyl chloride	ug/L	4 2 J	<5 0	<5 0	330	<1	<5
Total Xylenes	ug/L	<5 0	5 2	<5 0	<65	<1	<5

ug/L micrograms per liter, equal to parts per billion

NR Not Reported

ND Not Detected

J Detected but below Practical Quantitation Limit

Table 3-11
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW10
 Brenntag Chemtech, Soper Street Facility, St. Louis

<u>Chemical</u>		<u>Dec-99</u>	<u>Apr-00</u>	<u>Sep-00</u>	<u>Dec-00</u>	<u>Mar-01</u>	<u>May-01</u>
Acetone	ug/L	<10	<20	70	<100	88	210
Benzene	ug/L	10	61	55	34	37	32
2 Butanone (MEK)	ug/L	48	33	16	<100	24	13
n-Butylbenzene	ug/L	77	<50	<50	<10	<2	<5
sec-Butylbenzene	ug/L	<50	<50	<50	<10	<2	<5
tert-Butylbenzene	ug/L	<50	<50	<50	<10	<2	<5
Carbon disulfide	ug/L	40 J	14	83 J	NR	NR	NR
Chlorobenzene	ug/L	45 J	<50	<50	<10	<2	<5
Chloroethane	ug/L	<50	<50	<50	<10	<2	<5
Chloroform	ug/L	<50	<50	<50	<10	<2	<5
1,2-Dibromo-3-chloropropane	ug/L	<50	<50	<50	<25	<2	<5
1,2-Dichlorobenzene	ug/L	81	24 J	<50	<10	<2	<5
1,3-Dichlorobenzene	ug/L	<50	<50	<50	<10	<2	<5
1,4-Dichlorobenzene	ug/L	<50	<50	31 J	<10	<2	<5
1,1-Dichloroethane	ug/L	44 J	56	53	<10	51	<5
1,2-Dichloroethane	ug/L	<50	<50	<50	<10	<2	<5
1,1-Dichloroethene	ug/L	<50	<50	<50	<10	<2	<5
trans 1,2-Dichloroethene	ug/L	<50	<50	<50	<10	<2	<5
cis-1,2-Dichloroethene	ug/L	59	99	11	<10	67	8
Ethylbenzene	ug/L	45	150	160	88	74	99
2-Hexanone	ug/L	<10	<10	<10	<100	<2	<5
Isopropylbenzene	ug/L	37 J	66	76	<10	54	<5
p-Isopropyltoluene	ug/L	<50	<50	<50	<10	<2	<5
Methylene chloride	ug/L	<50	<20	<20	<10	<2	<5
Methyl-tert-butyl-ether	ug/L	NR	<10	<10	<10	<2	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<10	11	57 J	<100	<20	<10
Naphthalene	ug/L	76 J	11	18	<10	94	76
n-Propylbenzene	ug/L	41 J	48 J	61	<10	42	<5
Styrene	ug/L	<50	<50	<50	<10	<2	<5
Tetrachloroethene	ug/L	<50	<50	<50	<10	<2	<5
Toluene	ug/L	190	200	310	66	81	51
1,1,1-Trichloroethane	ug/L	<50	<50	<50	<10	<2	<5
1,1,2-Trichloroethane	ug/L	<50	<50	<50	<10	<2	<5
Trichloroethene	ug/L	35 J	<50	<50	<10	<2	<5
1,2,4-Trimethylbenzene	ug/L	26	24	28	13	20	19
1,3,5-Trimethylbenzene	ug/L	93	74	88	<10	65	57
Vinyl chloride	ug/L	<50	28 J	<50	<10	<2	<5
Total Xylenes	ug/L	178	476	415	263	247	632

ug/L micrograms per liter, equal to parts per billion

ND Not Detected

NR Not Reported

J Detected but below Practical Quantitation Limit

Table 3-12
Groundwater Analytical Results for Volatile Organic Compounds
Monitoring Well MW11
Brenntag Chemtech, Soper Street Facility, St Louis

<u>Chemical</u>		<u>Dec-99</u>	<u>Apr-00</u>	<u>Sep-00</u>	<u>Dec-00</u>	<u>Mar-01</u>	<u>May-01</u>
Acetone	ug/L	<10	<20	<100	<100	<50	280
Benzene	ug/L	6 4	2 8 J	280	18	56	110
2-Butanone (MEK)	ug/L	<5 0	13	<25	<100	<50	140
n-Butylbenzene	ug/L	4 3 J	2 1 J	<25	<10	<5	<25
sec-Butylbenzene	ug/L	<5 0	<5 0	<25	<10	<5	<25
tert-Butylbenzene	ug/L	<5 0	<5 0	<25	<10	<5	640
Carbon disulfide	ug/L	6 4 J	2 3 J	<50	NR	NR	NR
Chlorobenzene	ug/L	9	3 5 J	<25	<10	<5	<25
Chloroethane	ug/L	<5 0	<5 0	<25	<10	<5	<25
Chloroform	ug/L	<5 0	<5 0	<25	<10	<5	<25
1,2-Dibromo-3-chloropropane	ug/L	<5 0	<5 0	<25	<25	<5	<25
1,2-Dichlorobenzene	ug/L	6 5	5 8	<25	<10	<5	<25
1,3-Dichlorobenzene	ug/L	<5 0	<5 0	<25	<10	<5	<25
1,4-Dichlorobenzene	ug/L	<5 0	<5 0	<25	<10	<5	<25
1,1-Dichloroethane	ug/L	7 3	2 2 J	<25	<10	<5	<25
1,2-Dichloroethane	ug/L	<5 0	<5 0	<25	<10	<5	<25
1,1-Dichloroethylene	ug/L	<5 0	<5 0	<25	<10	<5	<25
trans-1,2-Dichloroethylene	ug/L	<5 0	<5 0	<25	<10	<5	<25
cis-1,2-Dichloroethylene	ug/L	7 8	2 4 J	<25	<10	<5	<25
Ethylbenzene	ug/L	28	23	61	<10	7 7	390
2-Hexanone	ug/L	<10	<5 0	<50	<100	<5	<25
Isopropylbenzene	ug/L	2 1 J	2 4 J	<25	<10	<5	300
p-Isopropyltoluene	ug/L	<5 0	<5 0	<25	<10	<5	<25
Methylene chloride	ug/L	<5 0	<20	25 J	<10	<5	<25
Methyl-tert-butyl-ether	ug/L	NR	<10	<50	<10	<5	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<10	<50	<100	<50	<50
Naphthalene	ug/L	7 6 J	5 0 J	<50	<10	<5	59
n-Propylbenzene	ug/L	<5 0	2 1 J	<25	<10	<5	730
Styrene	ug/L	<5 0	<5 0	<25	<10	<5	<25
Tetrachloroethylene	ug/L	<5 0	<5 0	<25	<10	<5	<25
Toluene	ug/L	15	2 7 J	310	140	40	2400
1,1,1-Trichloroethane	ug/L	<5 0	<5 0	<25	<10	<5	<25
1,1,2-Trichloroethane	ug/L	<5 0	<5 0	<25	<10	<5	<25
Trichloroethylene	ug/L	2 4 J	3 7 J	<25	<10	<5	<25
1,2,4-Trimethylbenzene	ug/L	13	16	<25	33	<5	3000
1,3,5-Trimethylbenzene	ug/L	4 3 J	6 4	<25	<10	<5	860
Vinyl chloride	ug/L	<5 0	<5 0	<25	<10	<5	<25
Total Xylenes	ug/L	121	105	210	36	38 5	2140

ug/L micrograms per liter, equal to parts per billion

ND Not Detected

NR Not Reported

J Detected but below Practical Quantitation Limit

Table 3-13
 Groundwater Analytical Results for Volatile Organic Compounds
 Monitoring Well MW12
 Brenntag Chemtech, Soper Street Facility, St Louis

Chemical		Dec-99	Apr-00	Sep-00	Dec-00	Mar-01	May-01
Acetone	ug/L	<500	<100	NS	<50	<10	<20
Benzene	ug/L	240 J	340	NS	<50	170	97
2-Butanone (MEK)	ug/L	580	18 J	NS	<50	<10	<10
n-Butylbenzene	ug/L	<250	<25	NS	<50	<1	<5
sec-Butylbenzene	ug/L	<250	<25	NS	<50	<1	<5
tert-Butylbenzene	ug/L	<250	<25	NS	<50	<1	<5
Carbon disulfide	ug/L	<500	16 J	NS	NR	<1	<5
Chlorobenzene	ug/L	<250	<25	NS	<50	14	<5
Chloroethane	ug/L	<250	<25	NS	<50	<1	<5
Chloroform	ug/L	<250	<25	NS	<50	<1	<5
1,2-Dibromo-3-chloropropane	ug/L	<250	<25	NS	<12	<1	<5
1,2-Dichlorobenzene	ug/L	<250	<25	NS	<50	14	<5
1,3 Dichlorobenzene	ug/L	<250	<25	NS	<50	<1	<5
1,4-Dichlorobenzene	ug/L	<250	<25	NS	<50	<1	<5
1,1-Dichloroethane	ug/L	<250	<25	NS	<50	<1	<5
1,2-Dichloroethane	ug/L	<250	<25	NS	<50	<1	<5
1,1-Dichloroethene	ug/L	<250	<25	NS	<50	<1	<5
trans-1,2-Dichloroethene	ug/L	<250	<25	NS	<50	<1	<5
cis-1,2-Dichloroethene	ug/L	<250	<25	NS	52	18	<5
Ethylbenzene	ug/L	150 J	62	NS	14	55	<5
2-Hexanone	ug/L	<250	<50	NS	<50	<1	<5
Isopropylbenzene	ug/L	<250	<25	NS	<50	<1	<5
p-Isopropyltoluene	ug/L	<250	<25	NS	<50	<1	<5
Methylene chloride	ug/L	<250	<50	NS	<50	<1	<5
Methyl-tert-butyl-ether	ug/L	NR	<50	NS	<50	<1	NR
4-Methyl-2-pentanone(MIBK)	ug/L	<500	<25	NS	<50	<10	<10
Naphthalene	ug/L	<500	<50	NS	<50	16	<5
n-Propylbenzene	ug/L	180 J	<25	NS	<50	<1	<5
Styrene	ug/L	<250	<25	NS	<50	<1	<5
Tetrachloroethene	ug/L	<250	<25	NS	<50	<1	<5
Toluene	ug/L	1500	240	NS	87	33	<5
1,1,1-Trichloroethane	ug/L	<250	<25	NS	<50	<1	<5
1,1,2-Trichloroethane	ug/L	<250	<25	NS	<50	<1	<5
Trichloroethene	ug/L	<250	<25	NS	<50	2	<5
1,2,4-Trimethylbenzene	ug/L	900	<25	NS	81	56	<5
1,3,5-Trimethylbenzene	ug/L	200 J	<25	NS	<50	4	<5
Vinyl chloride	ug/L	<250	<25	NS	<50	<1	<5
Total Xylenes	ug/L	2080	273	NS	85	76	<5

ug/L micrograms per liter, equal to parts per billion

NS Not Sampled

ND Not Detected

NR Not Reported

J Detected but below Practical Quantitation Limit

Table 3-14
Groundwater Analytical Results for Volatile Organic Compounds
Monitoring Well MW13
Brenntag Chemtech, Soper Street Facility, St. Louis

Chemical		Dec-99	Apr-00	Sep-00	Dec-00	Mar-01	May-01
Acetone	ug/L	<100	<20	73 J	<100	<20	<20
Benzene	ug/L	<50	<50	<10	<10	10	ND
2-Butanone (MEK)	ug/L	<50	53	<10	<100	<20	<10
n-Butylbenzene	ug/L	<50	<50	<10	<10	<2	<5
sec-Butylbenzene	ug/L	<50	<50	<10	<10	<2	<5
tert Butylbenzene	ug/L	<50	<50	<10	<10	<2	<5
Carbon disulfide	ug/L	<100	35 J	<10	<10	NR	NR
Chlorobenzene	ug/L	<50	<50	<10	<10	<2	<5
Chloroethane	ug/L	<50	<50	<10	<10	<2	<5
Chloroform	ug/L	<50	<50	<10	<10	<2	<5
1,2-Dibromo-3-chloropropane	ug/L	<50	<50	<10	<25	<2	<5
1,2-Dichlorobenzene	ug/L	<50	28 J	<10	<10	<2	<5
1,3-Dichlorobenzene	ug/L	<50	<50	<10	<10	<2	<5
1,4-Dichlorobenzene	ug/L	<50	<50	<10	<10	<2	<5
1,1-Dichloroethane	ug/L	<50	<50	<10	<10	<2	<5
1,2-Dichloroethane	ug/L	<50	<50	<10	<10	<2	<5
1,1-Dichloroethene	ug/L	<50	<50	<10	<10	<2	<5
trans-1,2-Dichloroethene	ug/L	<50	<50	<10	<10	<2	<5
cis-1,2-Dichloroethene	ug/L	<50	<50	43 J	<10	29	<5
Ethylbenzene	ug/L	60	33 J	68 J	26	46	<5
2-Hexanone	ug/L	<100	<10	<10	<100	<2	<5
Isopropylbenzene	ug/L	<50	<50	<10	<10	<2	<5
p-Isopropyltoluene	ug/L	<50	<50	53 J	<10	<2	<5
Methylene chloride	ug/L	<50	<50	15 J	<10	<2	<5
Methyl tert-butyl-ether	ug/L	NR	<10	<20	<10	<2	NR
4-Methyl-2-pentanone (MIBK)	ug/L	<100	<10	<20	<100	<20	<10
Naphthalene	ug/L	74 J	40 J	71 J	12	<2	<5
n-Propylbenzene	ug/L	<50	<50	<10	<10	<2	<5
Styrene	ug/L	<50	<50	<10	<10	<2	<5
Tetrachloroethene	ug/L	<50	<50	<10	<10	<2	<5
Toluene	ug/L	620	24	140	320	56	16
1,1,1-Trichloroethane	ug/L	<50	<50	<10	<10	<2	<5
1,1,2-Trichloroethane	ug/L	<50	<50	<10	<10	<2	<5
Trichloroethene	ug/L	<50	<50	43 J	<10	<2	<5
1,2,4-Trimethylbenzene	ug/L	<50	52	79 J	11	<2	<5
1,3,5-Trimethylbenzene	ug/L	<50	30 J	<10	<10	<2	<5
Vinyl chloride	ug/L	<50	<50	<10	<10	<2	<5
Total Xylenes	ug/L	267	80	86	182	254	254

ug/L micrograms per liter, equal to parts per billion

ND Not Detected

NR Not Reported

J Detected but below Practical Quantitation Limit